

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Currently Amended) A method usable with a well, comprising:
deploying a spring downhole;
energizing the spring before running the spring downhole, including twisting the spring
to reduce a diameter of the spring while maintaining the spring at the same axial length;
in the well, causing the spring to radially expand using energy stored in the spring and
without transferring additional energy to the spring; and
The method of claim 1, wherein the energizing the spring comprises: energizing a coil spring.
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Currently Amended) The method of claim ~~[[1]]~~2, wherein the twisting comprises:
twisting the spring consistent with a helical orientation of the spring.
8. (Canceled)
9. (Currently Amended) The method of claim ~~[[1]]~~2, wherein the energizing the spring
comprises:
twisting the spring from a direction opposite from a direction defined by a helical
orientation of the spring.

10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Currently Amended) The method of claim ~~[[1]]~~2, further comprising:
providing an elastomer sleeve around the spring.
16. (Canceled)
17. (Currently Amended) A method usable with a well, comprising:
forming a helical groove in a tubular member to form a spring that is used to expand in
the subterranean well to form an annular barrier;
downhole in the well, releasing energy stored in the spring to cause the spring to radially
expand to form an annular barrier in the well without the spring receiving additional energy to
aid the expansion; and ~~The method of claim 16, further comprising:~~
longitudinally varying a profile of the tubular member to form the spring.
18. (Original) The method of claim 17, wherein the varying comprises: making a wall
thickness of the tubular member smaller near a midpoint of the spring than near an end of the
spring.
19. (Original) The method of claim 17, wherein the varying comprises: varying a winding
density of the groove.
20. (Original) The method of claim 19, wherein the varying the winding density of the
groove comprises: forming a higher density of windings of the groove near a midpoint of the
spring than near an end of the spring.
21. (Canceled)

22. (Canceled)

23. (Currently Amended) An apparatus usable in a well, comprising:

a spring adapted to be energized before being run into the well and in the well release energy stored in the spring to cause the spring to radially expand to form an annular barrier in the well without receiving additional energy to aid the expansion, the spring comprising a tubular member having a helical groove; and

~~The apparatus of claim 21,~~ wherein a profile of the tubular member varies along a longitudinal length of the spring.

24. (Original) The apparatus of claim 23, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

25. (Currently Amended) An apparatus usable in a well, comprising:

a spring adapted to be energized before being run into the well and in the well release energy stored in the spring to cause the spring to radially expand to form an annular barrier in the well without receiving additional energy to aid the expansion, the spring comprising a tubular member having a helical groove; and

~~The apparatus of claim 21,~~ wherein an angle of the helical groove varies along a length of the spring.

26. (Original) The apparatus of claim 25, wherein the tubular member has a higher density of windings of the helical groove near a midpoint of the tubular member than near an end of the tubular member.

27. (Currently Amended) An apparatus usable in a well, comprising:

a spring adapted to be energized before being run into the well and in the well release energy stored in the spring to cause the spring to radially expand to form an annular barrier in the well without receiving additional energy to aid the expansion, the spring comprising a tubular member having a helical groove; and

~~The apparatus of claim 21,~~ further comprising:

a sealing sleeve circumscribing the spring.

28. (Original) The apparatus of claim 27, wherein the sealing sleeve comprises an elastomer sleeve.

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Previously Presented) A system usable in a subterranean well, comprising:
a string adapted to be run into a wellbore of the well; and
a spring adapted to expand to form an annular barrier in the well to seal an annulus of the well, the spring comprising a profile that varies along a longitudinal length of the spring.

33. (Original) The system of claim 32, wherein the spring comprises: a tubular member having a helical groove.

34. (Previously Presented) The system of claim 33, wherein a profile of the tubular member varies along the longitudinal length of the spring.

35. (Original) The system of claim 33, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

36. (Original) The system of claim 33, wherein an angle of the helical groove varies along a length of the spring.

37. (Original) The system of claim 33, wherein the tubular member has a higher density of windings of the helical groove near a midpoint of the tubular member than near an end of the tubular member.

38. (Original) The apparatus of claim 32, further comprising:

a sealing sleeve circumscribing the spring.

39. (Original) The apparatus of claim 38, wherein the sealing sleeve comprises an elastomer sleeve.

40. (Original) The apparatus of claim 32, further comprising:
a wedge circumscribed by the spring and adapted to exert a radial force to expand the spring.

41. (Original) The apparatus of claim 40, wherein the wedge comprises another spring.

42. (Original) The apparatus of claim 41, wherein said another spring comprises a winding that has an opposite orientation than a winding of the first spring.

43. (Previously Presented) An apparatus usable with a wellbore of a subterranean well, the wellbore having a minimum open hole inner diameter, the apparatus comprising:

a base pipe;

a spring mounted to the base pipe and comprising a profile that varies along a longitudinal length of the spring; and

an outer sealing element at least partially surrounding the spring, wherein the sealing element in a relaxed state of the spring has an outer diameter larger than the minimum open hole inner diameter.

44. (Original) The apparatus of claim 43, wherein the spring comprises: a tubular member having a helical groove.

45. (Canceled)

46. (Original) The apparatus of claim 44, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

47. (Original) The apparatus of claim 44, wherein an angle of the helical groove varies along a length of the spring.
48. (Previously Presented) A method usable with a well, comprising:
deploying a spring downhole, the spring having a wall thickness that decreases from a point near the end of the spring to a point near a midpoint of the spring;
energizing the spring; and
in the well, releasing energy stored in the spring to cause the spring to radially expand.
49. (Previously Presented) A method usable with a well, comprising:
deploying a spring downhole;
energizing the spring; and
deploying the spring around a wedge whose wall thickness is tapered so that the wall thickness is near a maximum near a midpoint of the wedge.
50. (Canceled)
51. (Previously Presented) The method of claim 49, further comprising:
deploying a wedge that comprises the spring along a spring.
52. (Previously Presented) The method of claim 49, further comprising:
providing an elastomer sleeve around the spring.
53. (Previously Presented) An apparatus usable with a well, comprising:
a spring adapted to expand to form an annular barrier in the well; and
a wedge circumscribed by the spring and adapted to exert a radial force to expand the spring,
wherein the wedge comprises another spring.
54. (Canceled)

55. (Previously Presented) The apparatus of claim 53, wherein said another spring comprises a winding that has an opposite orientation than a winding of the first spring.